Adaptation pathways for inland aquaculture in the tropics and subtropics

Louis Lebel[a,*]

[a] *Unit for Social and Environmental Research, Chiang Mai University, Chiang Mai, Thailand*

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ABSTRACT

Adaptation pathways with inland aquaculture are needed which allow reasonable actions to be taken now, for instance, to strengthen management of climate-related risks, while also leaving flexibility in households, and the sector as a whole, for adjustment of strategies in the future. This paper reviews what is known about the vulnerability of inland aquaculture systems to climate-related risks and efforts to manage those risks and applies that knowledge to assess emerging adaptation pathways for aquaculture in the tropics and sub-tropics. Aquaculture systems are likely to be impacted by changes in climate; not all impacts are expected to be negative and in some situations aquaculture may become an alternative to land-based agriculture. Most aquaculture systems, however, are vulnerable to increases in water temperatures, water scarcity, and their interactive effects on water quality, as well as extreme floods, storm surges and sea-level rise. These climate-related risks could be managed more effectively with greater attention to site selection, rearing practices, watershed management and sector development strategies. Adaptation in and with aquaculture will often require combinations and sequences of actions some of which will be contingent on how climate is anticipated to change, how it actually changed, and the impacts of past responses and other factors. The emerging adaptation pathways for aquaculture include contradictory elements reflecting uncertainties about effectiveness, differences in development ideologies and expectations for technological innovation in the sector. This implies that pathways will diverge under different contexts or in response to place or system specific events or triggers. This review extends previous analysis for aquaculture by explicitly considering timing and situations, and thus capturing the contingent and context-specific characteristic of adaptation pathways.

* Corresponding author
E-mail address: louis@sea-user.org or llebel@loxinfo.co.th (L. Lebel).